IN THE CLAIMS:

Please amend claims 1 and 18, and add a new claim 31 as follows:

1. (Currently Amended) A biochemical reaction detection apparatus, comprising;

a first membrane;

a plurality of islands provided on one side of said first membrane;

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on a side opposite to said one side of said first membrane corresponding to one of the islands [[though]] through a cross section of the first membrane; and

a cover placed on top of the probe cells for accommodating a sample solution layer between the cover and said side opposite to said one side of said first membrane covering all of the probe cells,

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that the temperature of the sample solution is controlled independently cell by cell.

2. (Original) The biochemical reaction detection apparatus according to claim 1, wherein the interval between each of said islands is 50 μm or longer.

3. (Original) The biochemical reaction detection apparatus according to claim 1, wherein the interval between each of said islands is 100 μm or longer.

4. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane has a heat conductivity of 10 w/mk (watt/(meter*kelvin)) or less.

5-8. (Cancelled)

9. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is made of a material or a composite material selected from a group consisting of silicon nitride, silicon oxide, aluminum oxide and Ta_2O_5.

10. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is 500 μm thick or thinner.

11. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is 20 μm thick or thinner.

12. (Previously Presented) The biochemical reaction detection apparatus according to claim 1, wherein said first membrane is 5 μm thick or thinner.

13 (Original) The biochemical reaction detection apparatus according to claim 1, wherein heat circuits are installed among said islands.

14. (Original) The biochemical reaction detection apparatus to claim 1, wherein thermal conductor layers are formed among said islands for draining heat.

15. (Original) The biochemical reaction detection apparatus according to claim 1, wherein said islands are formed in a mesh structure for draining heat.

16. (Original) The biochemical reaction detection apparatus according to claim 13, wherein the heat circuits are made from Si, Au, Ag or Cu.

17. (Original) The biochemical reaction detection apparatus according to claim 13, wherein a distance between one of said islands and one of the heat circuits is 10 – 500 μm.

18. (Currently Amended) A biochemical reaction detection apparatus, comprising:

a first membrane, a first side thereof being ~~set to be~~ provided with a sample solution layer;

a plurality of islands provided on a second side of said first membrane opposite to the first side of said first membrane; and

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on the first side of said first membrane corresponding to one of the islands through a cross section of said first membrane, each of said probe cells being set to contact with said sample solution layer,[[;]]

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that the temperature of the sample solution is controlled independently cell by cell.

19. (Original) The biochemical reaction detection apparatus according to claim 18, wherein the interval between each of said islands is 50 μm or longer.

20. (Original) The biochemical reaction detection apparatus according to claim 18, wherein the interval between each of said islands is 100 μm or longer.

21. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane has a heat conductivity of 10 w/mk (watt/(meter*kelvin)) or less.

22. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is made of a material or a composite material selected from a group consisting of silicon nitride, silicon oxide, aluminum oxide and Ta_2O_5.

23. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is 500 μm thick or thinner.

24. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is 20 μm thick or thinner.

25. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said first membrane is 5 μm thick or thinner.

26. (Original) The biochemical reaction detection apparatus according to claim 18, wherein heat circuits are installed among said islands.

27. (Original) The biochemical reaction detection apparatus to claim18, wherein thermal conductor layers are formed among said islands for draining heat.

28. (Original) The biochemical reaction detection apparatus according to claim 18, wherein said islands are formed in a mesh structure for draining heat.

29. (Original) The biochemical reaction detection apparatus according to claim 26, wherein the heat circuits are made from Si, Au, Ag or Cu.

30. (Original) The biochemical reaction detection apparatus according to claim 26, wherein a distance between one of said islands and one of the heat circuits is 10 – 500 μm.

31. (New) A biochemical reaction detection apparatus, comprising:

a first membrane, a first side thereof being set to be provided with a sample solution layer;

a plurality of islands provided on a second side of said first membrane opposite to the first side of said first membrane; and

probe cells for immobilizing probes for detecting biochemical reactions, each of said probe cells being provided on the first side of said first membrane corresponding to one of the islands through a cross section of said first membrane, each of said probe cells being set to contact with said sample solution layer; and

reaction products of polylysine and functional groups not binding with the probes on the first side of said first membrane,

wherein said islands are spaced from each other with intervals filled with air, and each of the islands includes a temperature controller for heating and temperature-controlling a corresponding one of said probe cells independently so that the temperature of the sample solution is controlled independently cell by cell.